A League of Their Own: Services Exporters –A Developing Country Perspective-

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May 2015

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This Draft: May 2015

Abstract: This paper provides a firm level portrait of services exporters along with goods exporters in a developing country. Current findings of firm level services trade literature suggest that the stylized facts of goods trade apply to services trade as well for a set of developed countries. This paper investigates if similar results hold for a developing country, Turkey, for the period 2003-2008. Most results lend support to the evidence found in the previous literature. However, the analysis of Turkish data shows that firms that export both goods and services are larger than those exporting goods or services only.

Keywords: Goods and services exporters, services exports, firm heterogeneity, developing country.

JEL Codes: *F10, F14*

* We are indebted to Keith Maskus, David Hummels, Ron Davies, Volodymyr Lugovskyy, Andrea Ariu and Greg Wright for valuable remarks on an earlier version. We wish to thank seminar participants in Econ-Anadolu 2013, Eskisehir, Turkey, ETSG 2013, Birmingham, UK, EIST 2014, Ankara, Turkey, AFSE 2014, Lyon, France and ERF 2015, Tunis, Tunisia for useful comments. The usual disclaimer applies.

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1 Introduction

Trade in goods has been a lively area of study since the beginning of economics as a distinct discipline. Recently, trade literature has shifted its focus to firm-level goods trade resulting in a diverse set of stylized facts. Firms that are involved in goods trade are observed to be larger in size, more productive, utilize capital-intensive production techniques and employ higher quality labor compared to non-traders. On the other hand, the share of firms that engage in goods trade is found to be very low. These stylized facts motivated the most recent big wave in the trade literature; namely, the heterogeneous firm models. For a detailed review of this literature, see Bernard, Jensen, Redding and Schott (2007).

The literature on services trade, however, is sparsely populated and developing only recently, compared to the literature on goods trade. Recent reviews of this literature are provided by François and Hoekman (2010) and Jensen (2011). The first theoretical studies in the literature are on the similarities of and differences between services trade and goods trade. Therefore, earlier discussions are focused on whether the models on goods trade would hold for services trade as well. On the empirical front, the initial studies mainly focus on the analyses that utilize country-sector specific datasets, possibly due to lack of firm-level data.

Studies of services trade with firm-level data, on the other hand, are very recent. Most of these studies are descriptive in nature and highlight the characteristics of the firms that engage in services trade in different countries.

This paper provides a firm level portrait of services exporters along with goods exporters in a developing country. Current findings of firm level services trade literature suggest that the stylized facts of goods trade apply to services trade as well for a set of developed countries. This paper investigates if similar results hold for a developing country, Turkey, for the period 2003-2008.

As one of the initial studies on firm-level services trade, Breinlich ve Criscuolo (2011) provide a micro-data analysis of services traders in the UK. They report that firms that engage in services trade are different from non-traders in their size, labor productivity and other firm characteristics. An important conjecture of their study is that firm heterogeneity exists in services trade firms as well, thereby making the heterogeneous firm models of goods trade literature a good starting point for modeling service traders.

The succeeding studies are in the same spirit and provide a panorama of firm-level services trade mostly for developed countries[1]. These studies also find evidence supporting the argument that the heterogeneous firm models of goods trade literature would also work for service traders.

There are few studies in the literature focusing on the relation between goods trade and services trade. Ariu (2012) analyzes the difference between goods trade and services trade using firm level data on Belgium. Kelle (2012) analyzes services trade activity of German manufacturing firms, which account for roughly 25

[1] Walter and Dell'mour (2010), Austrian data; Federico and Tosti (2011), Italian data; Tanaka (2011), Japanese data; Crozet, Milet ve Mirza (2011), French data; Grubljesic and Damijan (2011) Slovenian data; Minondo (2012), Spanish data; Malchow-Mollaer, Munch and Skaksen (2013), Danish data.

percent of service exporters in Germany. Moreover, he analyzes the types of services exported by manufacturers, the industries involved, which services are important in the respective industries, and how firm heterogeneity affects the pattern of service exports.

This recent literature has motivated us to conduct this study for two broad reasons: First, the trade theory has incorporated more heterogeneity in its set-up in the most recent decade than ever due to the stylized facts produced by the empirical work on firm-level goods trade. It seems natural to ask if the stylized facts of goods trade apply to service trade as well. The recent literature suggests that characteristics of firms that trade services are very similar to that of firms that trade goods. However, it is difficult to come to the same conclusion for developing countries because there is hardly any work on their services trade at the firm-level.

Second, global and regional initiatives of trade liberalization in goods and services affect not only mostly developed partner countries but also developing non-partner countries. In this respect, it is important to have at least a preliminary understanding of how goods and services trade are related in a developing country.

In this paper, we therefore focus on the close relationship of goods and services exports at the firm level by offering an analysis of services exports in Turkey, which constitutes a relevant developing country example.

First, we compare goods and services exporters in terms of a variety of firm characteristics. Our results show that firms exporting both goods and services are consistently larger, in terms of sales and employment, than firms exporting only goods or only services. This is a very robust result even at the sectoral level. In this regard, considering the results of other firm level empirical studies on developed countries, we suggest that there may be a meaningful difference between the size of different types of exporters in developed and developing countries. The results of our further analysis suggest that in contrast to the domestic firms, foreign owned goods exporters are bigger in size. The fact that an overwhelming majority of foreign owned firms in Turkey are of developed country origin leads us to the "developed-developing country difference" hypothesis in services exporting.

There may be many explanations for this difference. One of these can be borrowed from the literature on organization of firms. Bloom and Van Reenen (2010) and Bloom, Sadun and Van Reenen (2012) suggest that there are marked differences between practices of firms with developed and developing country origins stemming from the differences in the organizational form, namely ownership structure, and rule of law. Developed countries have better and decentralized management practices compared to developing countries. Turkish firms, which are mostly family owned, tend to centralize all of their activities, including goods exporting and services exporting, rather than distributing these activities to separate sister firms.

The result that goods and services exporters in Turkey are larger than any other type of firm that is found in this paper may point to the weakness of the management of the firms. Although the liberalization of goods trade is mostly limited to eliminating trade barriers, services trade liberalization involves broader

regulatory actions as well. Therefore, this type of liberalization has the potential to address bad management practices of developing country firms to increase their productivity and competitiveness.

Finally, we investigate the characteristics of goods and services exporters in a multivariate setting to identify the linkage between goods exporting and services exporting. Our results suggest that goods exporters with a larger size, higher labor productivity and capital intensity are more likely to export services as well. Moreover, a firm with a high volume of goods exports has high odds of being a services exporter. The results show that product variety has an important role in a goods exporter's services exporting likelihood. This result can be tied to the interlaced nature of goods and services. On the other hand, destination variety has no bearing on the probability of becoming a services exporter.

The map of the paper is as follows: Section 2 describes our data and presents descriptive statistics of goods and services exporters. Section 3 offers a comparison of firms on their exporting status using descriptive regressions. Finally, Section 4 presents our analysis of the firm-level characteristics of goods and services exporters followed by concluding remarks in Section 5.

2 Data

2.1 Construction and variables

The main data sources we used in this study are twofold: the Annual Industry and Service Statistics database and the Foreign Trade Statistics database of Turkey. The Annual Industry and Service Statistics is based on surveys[2] covering the enterprises in the industry and services sectors carried out by Turkish Statistical Institute (TURKSTAT).

The completeness and the consistency are the main strengths of the two databases used in this paper. The Foreign Trade Statistics database covers the entire universe of goods traders in Turkey, as the source of the data is the Customs. Moreover, the Annual Industry and Service Statistics database is based on a survey and covers all the services exporter firms with 20+ employees as all such firms in Turkey are required to participate in the survey by law. In essence, our data is the universe of firms with 20+ employees in Turkey as well as a subsample of firms with less than 20 employees, which have significant information for the sector [3].

A firm in our sample is an independent enterprise. If the enterprise has local units, we use aggregate data for the main enterprise.

[2] The questionnaires used in these surveys are available from the website of TURKSTAT at www.tuik.gov.tr.

[3] Full enumeration limits of the Survey are given as: (i) all enterprises having more than 20 employees, (ii) in terms of sectors, some activities according to NACE Rev. 2 (4-digit) class level are covered by full enumeration, (iii) in Turkey, the numbers of enterprises were less than 100 according to the classification of NACE Rev. 2 (4 digits). Therefore, our dataset covers the entire universe of firms having 20+ employees as well as firms with less than 20 employees, which have significant information for the sector.

Our sample covers the period 2003-2008. In our analysis, we include 330,680 firm-year observations. The database contains information on employment, wages, investment, value added, sales, foreign ownership[4] and the number of domestic plants of the firms. Our data on services trade come from the same database. For any given firm we have information about whether the firm exports services. There is no information on quantity, destination or type of activity in regards to services trade[5]. The classification of economic activity used in the study is NACE Rev. 1.1.

The second database that we use in our study is the Foreign Trade Statistics database. The main data source is customs declarations. The data set includes goods flows, the reference period, commodity code, partner country, statistical value (export f.o.b./import c.i.f.), nature of transaction and type of payment. The classification used for compiling Turkey's foreign trade statistics is the Harmonized System (HS) 12-digit.

We merge these two datasets to obtain firm-year observations on goods trade, services trade and firm characteristics.[6] We group the firms as: goods-exporters, *G_E* (a dummy variable that takes the value of 1 if the firm is exporting goods only and 0 otherwise); service-exporters, *S_E* (a dummy variable that takes the value of 1 if the firm is exporting services only and 0 otherwise); exporter of both goods and services, *Eboth* (a dummy variable that takes the value of 1 if the firm is exporting both goods and services and 0 otherwise).

We use several variables to reflect the characteristics of the firm in the analysis. *Sales*, *Employment, Large* and *Medium* represent the size of the firm. *Sales* is the gross sales of the firm from all its operations and deflated by the corresponding year's consumer price index. *Employment* is the total number of employees working for the firm. *Large* takes the value of 1 if the number of employees of the firm is greater than 100 and 0 otherwise. *Medium* takes the value of 1 if the number of employees of the firm is between 50 and 100 and 0 otherwise. Next, we use *Capital Intensity*, which is the capital-labor ratio, where capital is in real terms and labor is proxied by *Employment*. In the database, we do not have any variable that would reflect the quality of human capital in the firm. We use *Wages*, deflated by consumer price index, as a proxy for the quality of human capital. Labor productivity in real terms (*Sales/Employment*) is used as our *Productivity* variable. *Sales, Employment, Capital Intensity, Productivity* and *Wages* are in their logarithmic forms.

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[4] Until 2006 the surveys did not include any information on foreign ownership in services sectors. The foreign ownership question has been included in the survey in 2006.

[5] Since our dataset does not include information on the exact nature of the services trade transactions, it is not possible for us to conduct our analysis using separate GATS modes. For example, among the four modes of services supply defined by GATS, exports in terms of mode 3 are not available in our data. Also, some of the transactions can be carried out using different GATS modes simultaneously.

[6] Firms are uniquely identified between the two databases using the firm ID numbers derived from the tax ID numbers. The Foreign Trade Statistics database is more extensive in coverage compared to the Annual Industry and Service Statistics database because the latter is a survey that covers firms with 20+ employees. The share of the export value of the firms that are included in our data in the total exports of Turkey is around 80 percent.

MNE is a dummy variable which takes the value of 1 if the firm has at least 10 percent foreign ownership and 0 otherwise. Finally, *#Plant* is a variable to proxy for the local network of the firm and shows the number of domestic affiliates.

On the trade side, *Export Value* is the current value of total exports of a given firm. The variable is deflated by the export price index and used in logarithms. The other two related variables are *#Products* and *#Destinations* which show the total number of exported products and the number of destinations of goods exports, respectively, and used in logarithms. These variables are used as proxies for product variety and destination variety, respectively.

Summary statistics and panel characteristics of our data are provided in Appendix Table A1 and Table A2, respectively.

2.2 Descriptive statistics

Stylized Fact 1: Services exporting is a rare activity.

As highlighted in the heterogeneous firm literature, trade is a rare activity in almost all countries. In the US, only 4 percent of firms engaged in goods exporting in 2000 as reported by Bernard, Jensen, Redding and Schott (2007). In the UK, only 6 percent of firms engaged in services exporting in 2005 as reported by Breinlich and Criscuolo (2011).

Exports in the Turkish economy is no exception in this regard. Among all firms in Turkey 21.8 percent of firms export goods and 1.7 percent engages in services exports in 2003-2008 period as presented in Table 1. On the other hand, 1.7 percent of firms export both goods and services.

Stylized Fact 2: Services exporting takes place both in manufacturing and services sectors.

Most of the goods exports take place in the manufacturing sector. Within sub-categories of the manufacturing sector, across the board more than 30 percent of the firms engage in goods exports. Within the services sector, on the other hand, the wholesale & retail sector has the highest share of firms that export goods with 17.6 percent.

Similar to the fact that goods exporting occurs mainly in the manufacturing sector, the significant bulk of services exports takes place in the services sector. The share of services exporters in transport (22.4 percent) and computers and R&D (16.8 percent) sectors are significantly higher than those in the rest of the services sectors. On the other hand, it is not only the firms in the services sector but also the firms in the manufacturing sectors engage in services exports. It is observed that high-tech firms in the manufacturing sectors (9.7 percent in total) tend to export services more. This fact is in line with the literature: Borchsenius, Malchow-Moller, Munch and Skaksen (2010) suggest that while 80 percent of services imports and over 90 percent of services exports take place through firms in the services industries; the rest of services trade in the Danish economy takes place through the manufacturing firms.

<Insert Table 1 here>

Stylized Fact 3: The number of services exporters is small, however, they account for a significant share in sales.

Although the number of exporters is small, they account for a large share of economic activity measured by sales as presented in Panel 2 of Table 1. Although the share of exporters is only 25 percent, they account for 65 percent of the sales in the economy. The share of goods exporters in sales is 55 percent while the share of services exporters is only 2 percent. The striking figure in Table 1 is the share of the firms that export both goods and services: Only 1.7 of the firms export both goods and services; however, they account for 8.6 percent of the sales in Turkish economy.

In the manufacturing sector, where most of the goods trade takes place, 40 percent of the firms engage in exporting. Moreover, the share of these exporters in sales is a stunning 83 percent. Similar figures exist for the services sector. While 14 percent of the firms in services sector engage in exports, more than half of the sales belong to these firms. The flashy figure in the services sector is the sales performance of the firms that export both goods and services: Although they constitute only 1.4 percent of the firms, they account more than 10 percent of the sales.

Sectoral decomposition of the manufacturing sector in terms of goods exporting intensity is homogeneous. Among the high-tech goods producers, more than half of the firms are exporters. Moreover, the exporting firms in these sectors account for more than 90 percent of the sales. Another fact about the high-tech goods producers is that the share of the firms that export goods and services is the highest and their share in sales is around 10 percent.

Exporting is less common among services firms. The most open sectors are transport and computers & R&D with 25 percent of firms that engage in exports. The striking figure in the transport sector is that the share of the firms that export both goods and services is 5 percent while their share in sales is almost 50 percent.

Table 2 shows that the size of the firms matters for exporting, as well. The larger the firm is, the more open it is to trade. While only 10 percent of the small firms with less than 20 employees engage in exports, this share increases to 72 percent for large firms with more than 500 employees. On the other hand, the share of services exporters does not rise with the size of the firm substantially.

There is a significant difference between manufacturing firms and services firms. Although the share of the small firms with 1 to 19 employees that export is around 10 percent in the economy, the share of exporting firms in manufacturing firms increase to 85 percent when size increases. However, the share is limited to less than 50 percent in the services sector even for firms with more than 500 employees.

<Insert Table 2 here>

The facts from Table 1 and Table 2 are that the share of firms that engage in services exports and their corresponding share in sales are limited. However, this is not the case for goods exporters and both goods and services exporters. The shares of firms in these trading status increase with firm size and constitute an important part of the economic activity. Therefore, next we analyze the goods

exporter sample in Table 3, which presents the share of goods and services exporters by product (in goods) variety. The implications of this Table are striking. Most of the firms that export only a few product types prefer to stay only in the goods exporting business. On the other hand, firms that export a wider variety of products tend to export services as well. This is more obvious in the manufacturing sector. This descriptive analysis suggests that when the variety of exported products increases the firms tend to export services as well.

<Insert Table 3 here>

Finally, we explore the role of foreign involvement in the exporting behavior of the firms. Figure 1 demonstrates the trading status of multinational enterprises (MNE) in Turkey. Compared to domestic firms, the share of exporting firms are much higher within MNEs. Nearly 30 percent of the foreign affiliated firms sell only to the domestic market. Among MNEs, 54 percent of the firms engage in goods exporting and 8 percent in services exporting. Moreover, 9 percent of multinationals export both goods and services.

<Insert Figure 1 here>

3 Comparison of firms on exporting status

In our analysis of firms that export both goods and services, we also investigate the differences between goods exporters (*G_E)*, services exporters (*S_E)* and both goods and services exporters (*Eboth)* in terms of their size distributions. Figure shows the kernel density diagrams of sales (in logs) in year 2008. The result of the Kolmogorov-Smirnov test shows that these three distributions are different from each other.[7] The blue line represents sales of *G_E* firms; the green line, *S_E* firms; and finally the red line, *Eboth* firms.

A domestic firm becomes an exporter, only after passing a certain size threshold. After that, as represented by the unaccompanied green line in the left part of Figure 2, small firms get into international trade first by exporting services. Then, as their size gets larger they add goods exporting into their lines of business as well. Among small to medium size firms, illustrated in the left half of the density diagram, more firms have *S_E* status than *G_E* and *Eboth*. However, as the firm gets larger, more firms export goods and services simultaneously. Moreover, very large firms never export services only demonstrated by the disappearance of green line after a certain value of sales. The implication of Figure 2 is similar to what we observed in the previous section: Firms that export both goods and services are larger in size than firms that only export goods.

<Insert Figure 2 here>

Next, we use more formal analysis to compare firms that export both goods and services with goods exporters and services exporters to confirm our previous observations, following Bernard and Jensen (1999). We regress firm characteristics on dummies representing trading status, namely, goods exporter (G_E), services exporter (S_E) and goods and services exporters (Eboth), where *non-traders* is the excluded category. The results of the regressions of descriptive firm characteristics

[7] The results are available upon request.

on exporter groups are presented in Table 4. We run panel regressions with both year and 2-digit sector fixed effects[8].

<Insert Table 4 here>

Stylized Fact 4: Firms that engage in goods and/or services exporters are larger than non-exporters.

Stylized Fact 5: Firms exporting both goods and services are larger than goods exporters or services exporters.

The results in Table 4 suggest that firms that engage both in goods and services exports, *Eboth* are larger[9] than non-exporters as well as goods exporters *G_E* or services exporters *S_E* in terms of all firm characteristics that we consider.

Next, we compare goods exporters and services exporters. The results suggest that there are higher export premia for firms that exports goods only, *G_E* in terms of sales, employment, wages and productivity. However, services exporters are more capital intensive. As our data set does not have any information on the quality of human capital, we use wages as a proxy, assuming that employees earning higher wages have higher quality. Based on this assumption, goods exporters employ higher quality workers compared to services exporters.

The result that firms exporting both goods and services are larger than non-exporters, goods exporters or services exporters is noteworthy. Breinlich and Criscuolo (2011) provide a similar type of analysis and find that goods exporters are larger than all other types of firms in the UK. This brings to mind that there might be differences between practices of firms with developed and developing country origins[10].

Organizational structure of firms tends to differ across developed and developing countries as suggested in Bloom and Van Reenen (2010) and Bloom, Sadun and Van Reenen (2012). The former paper finds that family firms with a family chief executive officer, founder firms, and government-owned firms are associated with persistent bad management practices. In developed economies (Germany, Japan, Sweden and the United States), these type of firms constitute about 20 to 30 percent of all firms. On the other hand, in developing countries (Brazil and India) the share of these types of firms rises up to 60 to 75 percent. In Turkey, 90 percent of firms are family owned, 60 percent of which has a CEO from the family members[11]. Underdeveloped financial markets and poor rule of law in developing countries are likely explanations for this difference (La Porta,Lopez-de-Silanes, Shleifer and Vishny, 1997).

The latter paper, Bloom, Sadun and Van Reenen (2012), finds that firms headquartered in high trust regions (mostly in the US and Northern Europe) are significantly more likely to decentralize. They suggest that rule of law would be a

[8] The results of the Hausman specification tests favor fixed effects estimates over random effects as presented in the bottom of the table.

[9] The differences between the coefficients are statistically significant and the test results are available upon request.

[10] Ariu (2012) reports a similar result like ours for Belgian firms, without further investigating this result. Therefore, it is not possible to know if Belgian case is an exception or disprove the hypothesis of "developing-developed country firms difference".

[11] See Caliskan (2008)

good proxy for trust as contracts are easier to enforce enabling sustainable delegation. Turkey ranks 55th among all countries for the period of 2003-2008 in the rule of law index of Worldwide Governance Indicators by World Bank and this rank has not improved in time. This fact implies that decentralization of business is less likely in Turkey similar to many developing countries. Therefore, Turkish firms tend to centralize all their activities, including goods exporting and services exporting, rather than distributing these activities to separate sister firms.

To sum up, there are marked differences between practices of firms with developed and developing country origins stemming from the differences in the organizational form, namely ownership structure, and rule of law. Our data lacks information about family owned firms. Rule of law index for Turkey has not changed at all between 2003 and 2008. However, there is information on foreign ownership. Bloom and Van Reenen (2010) report that foreign multinationals have better management practices compared to domestic firms. They also find that multinationals transplant their average degree of decentralization. To analyze this last point, we conduct a simple exercise: investigating the differences between domestic and foreign owned firms, in Turkey, in their exporting behavior as presented in Section 3.1.

3.1 Ownership status

An overwhelming majority of multinational firms in Turkey that export goods or services have developed country origins. To be precise, in 2008, sales of MNEs originating from developed countries accounted for nearly 80 percent of all MNE sales in Turkey[12]. Therefore, these firms are more likely to employ production or management techniques that reflect the developed country practices. For this reason, it is valuable to see if there is a difference in the exporting behavior of the foreign-owned and domestically owned firms in Turkey.

The results presented in Table 5 replicate the analyses in Table 4 for domestically and foreign owned firms that export goods and services in Turkey in year 2008[13] only, due to data constraints. Panel A of Table 5 reports the results for the Domestic Sample, which includes privately, owned domestic firms. Panel B, on the other hand, presents the regression results for the MNE Sample, which includes firms with at least 10 percent foreign ownership.

<Insert Table 5 here>

Panel A of Table 5 shows that domestic firms that export both goods and services are larger in terms of sales and employment, more capital intensive and productive and pay higher wages compared to domestic firms that export only goods or only services. This result is consistent with the results obtained for the full sample in Table 4.

Panel B of Table 5 shows that MNEs that export only goods (*G_E*) are larger than MNEs that export both goods and services (*Eboth*) in terms of their sales and are more capital intensive and productive. This result is in line with the results

[12] See www.ekonomi.gov.tr

[13] We rerun our regressions for 2008 for the whole sample, the results do not change.

reported by Breinlich and Criscuolo (2011), yet contradicts the domestically owned firm results supplied in Panel A of Table 5. In other words, there exist larger export premia from exporting only goods rather than engaging in both types of exports for multinational firms.

The results presented in this section may be interpreted as suggestive evidence supporting the "developed-developing country difference" hypothesis. However, further research from other data sources is necessary to come to a strong conclusion on this issue.

3.2 Sectoral differences

So far, we have two important observations. First, in Turkey firms that export both goods and services are larger than firms that only export goods or services. Second, multinational firms operating in Turkey are different than domestic firms: Within the MNE sample, goods exporters are larger in size compared to both goods and services exporters.

In fact, organizational structure, degree of integration of services in production and export business of firms in different manufacturing sectors are heterogeneous. Due to these structural differences across sectors, firms in some sectors that export both goods and services have to be larger in size compared to others. In these respects, next we analyze if there are sectoral differences in our descriptive regressions.

Table 6 repeats the regressions in Table 4 for each individual sector in 2-digit NACE Rev.1 classification. Each column of Table 6 is the regression result of each sector. For simplicity we only provide sales as the dependent variable. However, we also perform the same comparison among sectors for other firm characteristics and the results are similar.

<Insert Table 6 here>

The results shown in Table 6 suggest that almost in all of the sectors firms that export both goods and services have larger sales compared to firms that only export goods or services. We also run the same regressions for only domestic firms. The results are similar.[14] Results in Table 6 do not reveal a pattern for the differences between sectors in terms of services exports.[15]

At this point, lack of a pattern at the sectoral level signals the need for further analysis on the characteristics of the firms that engage both in goods and services exports which is presented in Section 4.

4 Characteristics of goods and services exporters

In this section, we investigate the characteristics of goods exporting firms that are also services exporters in a multivariate setting to understand the relation between goods exporting and services exporting as in Kelle (2012). It is important

[14] The results are available upon request.

[15] We also run regressions in 4-digit classification to observe if there is any sectoral difference information missed due to aggregation. Results are similar and available upon request.

to see what type of goods exporters (small vs. large, single vs. multi-product, single vs. multi-destination, domestic vs. MNE) are also likely to be services exporters in Turkey.

Since we have information only on the extensive margin of services exports for the firms in our sample, it is not possible to include any country characteristics in our regressions. Under the circumstances, we use the following equation to formalize the extensive margin estimation of services exporting observed within goods exporters:

$$Pr(Services\ Exporter) = \beta_0 + \beta_1(Size)_{it} + \beta_2(Goods\ Exports)_{it} + \beta_3 X_{it} + u_{it}$$

The dependent variable takes the value of 1 if the goods exporter is a services exporter as well, 0 otherwise. As explained in Table 1, 1.7 percent of all firms export both goods and services. In line with the literature, exporting both goods and services is a rare activity in our sample as well.

Services exports of a goods exporter i at time t is explained by *Size*, *Goods Exports* and other characteristics, X of the firm. We use a panel probit estimation with a robust variance-covariance matrix.

Size is proxied by two dummy variables *Large* and *Medium*.[16] *Goods Exports* in the above equation is measured by *Export Values* in regressions reported in Table 7 and *#Products* and *#Destinations* in regressions of Table 8. Other firm characteristics are *Productivity* and *Capital Intensity* as well as *#Plant* and *MNE*.

<Insert Table 7 here>

<Insert Table 8 here>

In both Table 7 and Table 8 after controlling for *Size* and *Goods Exports*, other firm characteristics are successively added to the regressions. In all regressions reported in both Tables, goods exporters with a larger size, higher labor productivity and capital intensity are more likely to export services as well. While the number of local plants owned by the goods exporter has no effect on the likelihood of services exporting, the multinational status (partial or full) positively and significantly affects this likelihood.

Export Value affects the odds in favor of exporting services as shown in Table 7. However, this variable is significant only at 10 percent. In other words, a firm's volume of goods exports has a weak positive effect on the probability of a firm becoming a service exporter.

Upon finding this result we proceed to check the effect of product and destination variety of goods exports on the services export likelihood. Table 8 replicates the regressions in Table 7 by using *#Products* or *#Destinations* as a proxy for *Goods Exports*. The product variety and the destination variety results are reported in columns 1-4 and columns 5-8.

The results show that product variety has an important role in a goods exporter's services exporting likelihood. This result can be tied to the interlaced nature of goods and services. For example, if a firm is producing and exporting

[16] A continuous variable, *Employment*, is used to control for size as well. The results are qualitatively the same and available upon request.

many goods, it may be more cost efficient for this firm to provide transportation and insurance services to the final customer abroad. In other words, as firms diversify their portfolios of exported goods their probability of bundling these products with complementary services may increase.

The second set of results related to destination variety reported in Table 8 show no regular patterns. As the firms' diversity in terms of destinations of goods exported increases, the probability of becoming a services exporter goes up as reported in column (6). However, as we add other firm level controls in the regressions this effect disappears.

5 Conclusion

The objective of understanding services exports in a developing country is the main propellant of the current paper, which offers a firm-level portrait of services exports in Turkey for the period 2003-2008.

Our first set of results (stylized facts 1 and 4) lend support to the main conclusions of heterogeneous firm literature in goods trade; similar to goods exporting services exporting is a rare activity in a developing country; firms that engage in goods and/or services exporting are larger than non-exporters.

Based on our further analysis, we then provided the "developed developing country difference" hypothesis. To be precise, exporters of both goods and services are consistently bigger than goods exporters or services exporters in Turkey, which is not the case for most developed countries that are analyzed in the recent empirical studies in services trade literature. The origins of this difference may stem from the differences in organizational form and rule of law. As multinational firms from developed countries reflect better and decentralized management practices of their countries of origin, we conducted an analysis to test the differences between Turkish firms and multinationals operating in Turkey. We found that goods exporting multinationals, most of which are from developed countries, are larger than multinationals that export both goods and services. This result is consistent in the sectoral decomposition as well, which could be a specific characteristic of a developing country.

Finally, in our multivariate analysis of characteristics of goods and services exporters, our analysis indicated that goods exporters with a larger size, higher labor productivity and capital intensity are more likely to export services as well. Moreover, having a wide spectrum of goods to export increases the odds in favor of becoming a services exporter. This result would be interpreted as a sign of complementarity between goods and services exports. Recalling the fact that Turkey heavily exports transportation services to the world, this result may very well indicate the tendency that Turkish goods exporters are more likely to bundle their manufactured products with complementary transport services.

As a final word, what motivated our current work is the belief that the results of this endeavor will help pave the road in understanding services trade, in particular the services exporting, in a developing country. In order to understand the potential effects of regional and global trade agreements on developing

countries, there is a need for a multitude of studies providing evidence for the current status of goods and services exporters using micro data. In this light, the current paper constitutes the first firm-level developing country snapshot.

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Table 1. The share of goods and services exporters by sector

	Share of Firms				*Share of Sales*			
	Notrade	G_E	S_E	Eboth	Notrade	G_E	S_E	Eboth
Manufacturing	*60.0*	*37.6*	*0.3*	*2.1*	*17.2*	*76.2*	*0.3*	*6.4*
Resource intensive	69.4	29.0	0.2	1.5	22.5	74.5	0.2	2.8
Labor intensive	60.0	37.9	0.3	1.8	26.3	69.3	0.3	4.2
Capital intensive, low-med tech	59.7	38.1	0.3	1.9	16.9	77.7	0.3	5.1
Capital intensive, high tech	50.2	46.0	0.5	3.3	6.9	81.2	0.3	11.6
Technology intensive, high tech	44.1	50.0	0.7	5.2	9.7	79.9	0.1	10.2
Services	*86.4*	*9.4*	*2.8*	*1.4*	*46.5*	*40.2*	*3.2*	*10.2*
Const.& util.	91.6	6.3	0.7	1.4	63.3	32.9	0.4	3.4
Wholesale & retail	80.6	17.6	0.5	1.3	43.5	52.4	0.5	3.7
Hotels & Rest.	96.7	1.9	1.2	0.3	81.0	12.5	4.9	1.6
Transport	72.2	5.4	17.2	5.2	19.9	15.0	15.2	49.9
Comp. & R&D	76.5	6.7	11.3	5.5	49.2	17.7	13.6	19.5
Other services	95.1	1.6	2.8	0.5	80.1	9.4	8.0	2.5
TOTAL	*74.7*	*21.8*	*1.7*	*1.7*	*34.5*	*55.0*	*2.0*	*8.6*

Note: Table reports the share of firms and share of sales in 11 aggregate sectors in terms of the trading status. "*Eboth*" refers to firms that export both goods and services, "*G_E*" refers to firms that export goods but do not export services, "*S_E*" refers to the firms that export services but not goods. "Notrade" refers to firms that export neither goods nor services. The sectors are classified as OECD ISIC REV. 3 Technology Intensity definition.

Table 2. The share of goods and services exporters by size

	Total				*Manufacturing*				*Services*			
	Notrade	S_E	G_E	Eboth	Notrade	S_E	G_E	Eboth	Notrade	S_E	G_E	Eboth
#employee												
1-19	90.30	0.69	8.61	0.40	87.23	0.18	12.20	0.39	92.63	1.08	5.88	0.41
20-50	68.50	2.07	27.51	1.92	57.95	0.32	39.81	1.92	79.92	3.96	14.19	1.93
51-100	59.16	2.15	35.60	3.09	44.05	0.50	52.35	3.10	77.60	4.16	15.15	3.09
101-250	47.57	1.86	46.06	4.51	31.16	0.49	63.50	4.85	75.13	4.18	16.75	3.93
251-500	37.27	2.26	54.20	6.27	20.78	0.49	72.57	6.16	64.30	5.17	24.08	6.46
500+	27.80	1.70	62.52	7.98	13.63	0.30	79.22	6.85	52.93	4.19	32.89	9.99
TOTAL	71.45	1.60	24.97	1.98	59.65	0.32	37.86	2.17	83.61	2.92	11.69	1.78

Note: Table reports the share of firms in different size categories in terms of trading status. "*Eboth*" refers to firms that export both goods and services, "*G_E*" refers to firms that export goods but do not export services, "*S_E*" refers to the firms that export services but not goods. "Notrade" refers to firms that export neither goods nor services. The first column shows the size groups of the firms measured in terms of number of employees. Panel 1 reports the shares for the full sample, whereas Panel 2 and Panel 3 report the shares for manufacturing and services sector sample, respectively. As there are firms where employment numbers are missing, the total figures do not represent the overall sample as in Table 1.

Table 3. The share of goods and services exporters by product variety

	Total		*Manufacturing*		*Services*	
	G_E	Eboth	G_E	Eboth	G_E	Eboth
#products						
1	93.27	6.73	96.77	3.23	85.52	14.48
2-5	93.70	6.30	95.84	4.16	86.70	13.30
6-10	93.13	6.87	94.96	5.04	86.64	13.36
11-20	92.54	7.46	93.83	6.17	88.03	11.97
21-30	92.22	7.78	93.51	6.49	87.63	12.37
31-50	91.53	8.47	93.12	6.88	87.05	12.95
51-100	91.31	8.69	92.69	7.31	88.15	11.85
100+	87.78	12.22	90.12	9.88	84.40	15.60
TOTAL	93.27	6.73	96.77	3.23	85.52	14.48

Note: Table reports the share of firms in different product variety groups in terms of trading status. "*Eboth*" refers to firms that export both goods and services, "*G_E*" refers to firms that export goods but do not export services, "*S_E*" refers to the firms that export services but not goods. "Notrade" refers to firms that export neither goods nor services. The first column shows the range of product variety exported by these firms. Panel 1 reports the shares for the full sample, whereas Panel 2 and Panel 3 report the shares for manufacturing and services sector sample, respectively.

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Table 4. Regressions of firm-level variables on trading status

	Sales	Employment	Capital Intensity	Wages	Productivity
Eboth	0.347***	0.203***	0.638***	0.337***	0.129***
	(0.014)	(0.010)	(0.075)	(0.014)	(0.012)
G_E	0.254***	0.150***	0.221***	0.222***	0.093***
	(0.008)	(0.005)	(0.041)	(0.010)	(0.006)
S_ E	0.134***	0.097***	0.537***	0.131***	0.041***
	(0.016)	(0.011)	(0.088)	(0.020)	(0.013)
R^2	0.010	0.019	0.001	0.015	0.009
Hausman	6,362***	3,530***	3,380***	2,040***	3,826***
# of Obs	330,858	319,702	319,702	330,855	319,702

Note: Standard errors are reported in brackets. ***, ** and * denotes significance at 1%, 5% and 10%, respectively. The methodology is panel fixed effects regressions with year and industry fixed effects. The explanatory variables are "*Eboth*", which refers to firms that export both goods and services; "*G_E*", which refers to firms that export goods but do not export services; "*S_E*", which refers to the firms that export services but not goods. Firms that export neither goods nor services are represented in the constant term. The dependent variables are given at the top of each column. All dependent variables are in real terms except for employment and in logarithmic form. Under the null hypothesis of the Hausman specification test, the random effects model provides consistent estimates as opposed to the fixed effects model.

Table 5. Regressions of firm-level variables on exporting status by ownership structure, 2008

PANEL A: DOMESTIC SAMPLE					
	Sales	Employment	Capital Intensity	Wages	Productivity
Eboth	2.200***	1.096***	3.599***	2.339***	1.001***
	(0.045)	(0.032)	(0.101)	(0.047)	(0.029)
G_E	1.847***	0.862***	2.603***	1.807***	0.890***
	(0.018)	(0.012)	(0.046)	(0.022)	(0.012)
S_ E	1.367***	0.567***	3.093***	1.573***	0.713***
	(0.045)	(0.031)	(0.124)	(0.055)	(0.032)
R^2	0.131	0.083	0.058	0.068	0.066
# of Obs	55,070	55,070	55,070	55,070	55,070
PANEL B: MNE SAMPLE					
	Sales	Employment	Capital Intensity	Wages	Productivity
Eboth	1.561***	0.785***	1.447***	1.733***	0.726***
	(0.180)	(0.132)	(0.287)	(0.198)	(0.120)
G_E	1.617***	0.746***	1.514***	1.412***	0.822***
	(0.112)	(0.082)	(0.211)	(0.154)	(0.086)
S_ E	0.382**	0.189	0.851***	0.916***	0.157
	(0.179)	(0.124)	(0.287)	(0.223)	(0.133)
R^2	0.137	0.062	0.043	0.080	0.073
# of Obs	1,633	1,633	1,633	1,633	1,633

Note: Domestic Sample includes purely domestic firms that are privately owned. MNE Sample includes multinational firms (at least 10 percent foreign ownership) operating in Turkey. Standard errors are reported in brackets. ***, ** and * denotes significance at 1%, 5% and 10%, respectively. "*Eboth*" refers to firms that export both goods and services, "*G_E*" refers to firms that export goods but do not export services, "*S_E*" refers to the firms that export services but not goods. Firms that export neither goods nor services are represented in the constant term. All dependent variables are in real terms except for employment and in logarithmic form.

Table 6. Regressions of sales on exporting status by 2-digit NACE sector

	Food	Tobacco	Textiles	Apparel	Leather	Wood	Paper	Publishing	Petroleum	Chemicals	Plastics	Non-Metal
Eboth	0.387***	-0.0804	0.265***	0.324***	0.374***	0.385***	0.448***	0.237***	0.330	0.374***	0.302***	0.257***
	(0.059)	(0.383)	(0.039)	(0.039)	(0.092)	(0.112)	(0.093)	(0.067)	(0.216)	(0.076)	(0.045)	(0.062)
G_E	0.185***	-0.033	0.213***	0.243***	0.229***	0.259***	0.273***	0.167***	0.230	0.293***	0.230***	0.192***
	(0.029)	(0.284)	(0.018)	(0.019)	(0.053)	(0.055)	(0.055)	(0.049)	(0.211)	(0.057)	(0.031)	(0.035)
S_E	-0.517	-1.382***	0.092	0.146	0.101	-0.386	-0.182*	0.047	0.318	-0.054	0.100	0.278***
	(0.432)	(0.426)	(0.139)	(0.091)	(0.066)	(0.528)	(0.110)	(0.155)	(0.274)	(0.161)	(0.202)	(0.099)
R^2	0.009	0.025	0.016	0.016	0.017	0.029	0.027	0.009	0.008	0.017	0.020	0.008
Hausman	212.11	-26.39	165.13	290.37	30.34	16.67	39.09	50.07	10.13	58.46	181.44	93.11
# of Obs	14,120	145	19,010	20,487	3.234	2,181	2,595	3,415	481	4,648	7,619	9,655

	Basic Metals	Fabricated Metals	Machinery	Electrical Machinery	Radio and TV	Medical	Motor Vehicles	Other Transport	Furniture	Recycling	Utilities
Eboth	0.215**	0.354***	0.319***	0.312***	0.120	0.272	0.500***	1.480***	0.324***	0.295	0.209
	(0.090)	(0.062)	(0.044)	(0.059)	(0.166)	(0.188)	(0.077)	(0.309)	(0.059)	(0.552)	(0.295)
G_E	0.201***	0.216***	0.227***	0.226***	0.131	0.294***	0.256***	1.008***	0.229***	0.389	0.247**
	(0.047)	(0.035)	(0.025)	(0.048)	(0.148)	(0.086)	(0.046)	(0.217)	(0.033)	(0.260)	(0.122)
S_E	-0.165	0.435***	0.097	0.462**	0	0.339*	0.179	0.520***	0.144	0	0.049
	(0.344)	(0.124)	(0.087)	(0.197)	(0)	(0.198)	(0.188)	(0.192)	(0.190)	(0)	(0.260)
R^2	0.009	0.015	0.016	0.020	0.003	0.022	0.029	0.044	0.018	0.033	0.003
Hausman	175.34	143.21	291.45	12.08	7.68	37.98	48.87	11.97	126.99	1.02	30.26
# of Obs	4,823	12,346	11,900	3,601	652	1,145	4,447	3,229	8,042	155	1,263

Note: Standard errors are reported in brackets. ***, ** and * denotes significance at 1%, 5% and 10%, respectively. All regressions include year and industry fixed effects. The explanatory variables are "*Eboth*", which refers to firms that export both goods and services; "*G_E*", which refers to firms that export goods but do not export services; "*S_E*", which refers to the firms that export services but not goods. Firms that export neither goods nor services are represented in the constant term. The dependent variable is sales in real terms and in logarithmic form. Under the null hypothesis of the Hausman specification test, the random effects model provides consistent estimates as opposed to the fixed effects model.

Table 7. Characteristics of services exporters

VARIABLES	(1)	(2)	(3)	(4)	(5)
Size: Large	0.140***	0.116***	0.198***	0.198***	0.186***
	(0.021)	(0.021)	(0.022)	(0.022)	(0.022)
Size: Medium	0.129***	0.119***	0.119***	0.119***	0.113***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Export Value		0.018***	0.006*	0.006*	0.006*
		(0.004)	(0.004)	(0.004)	(0.004)
Productivity			0.044***	0.044***	0.038***
			(0.008)	(0.008)	(0.008)
Capital Intensity			0.020***	0.020***	0.020***
			(0.002)	(0.002)	(0.002)
#Plants				-0.000	0.002
				(0.017)	(0.017)
MNE					0.231***
					(0.037)
X^2	61.58	87.65	345.21	345.72	393.32
# of Obs	77,963	77,963	76,153	76,153	76,153

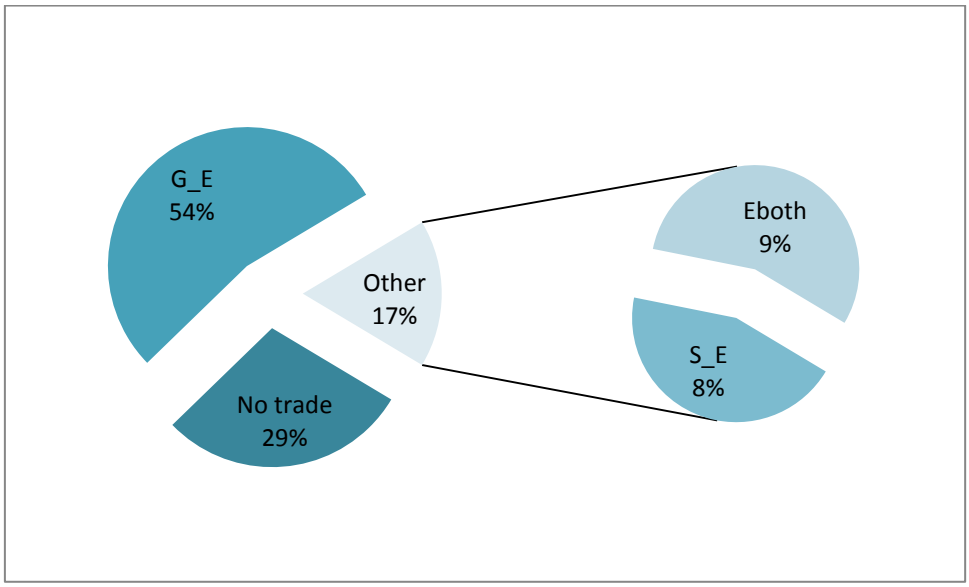
Note: Standard errors are reported in brackets. ***, ** and * denotes significance at 1%, 5% and 10%, respectively. Panel probit regressions with year fixed effects are used.

Table 8. Characteristics of services exporters, robustness

	Product variety				Destination variety			
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Size: Large	0.102***	0.178***	0.179***	0.167***	0.124***	0.211***	0.211***	0.200***
	(0.021)	(0.022)	(0.022)	(0.022)	(0.021)	(0.022)	(0.022)	(0.022)
Size: Medium	0.111***	0.110***	0.110***	0.105***	0.122***	0.124***	0.124***	0.119***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
#Products	0.062***	0.041***	0.041***	0.039***				
	(0.007)	(0.007)	(0.007)	(0.007)				
#Destinations					0.037***	-0.005	-0.005	-0.008
					(0.010)	(0.011)	(0.012)	(0.011)
Productivity		0.039***	0.039***	0.033***		0.049***	0.049***	0.043***
		(0.008)	(0.008)	(0.008)		(0.008)	(0.008)	(0.008)
Capital Intensity		0.020***	0.020***	0.020***		0.020***	0.020***	0.020***
		(0.002)	(0.002)	(0.002)		(0.002)	(0.002)	(0.002)
#Plants			-0.002	0.000			-0.002	0.001
			(0.017)	(0.017)			(0.017)	(0.017)
MNE				0.226***				0.233***
				(0.037)				(0.037)
χ^2	138.46	370.35	371.02	415.94	76.80	338.38	339.04	386.84
# of Obs	77,963	76,153	76,153	76,153	77,963	76,153	76,153	76,153

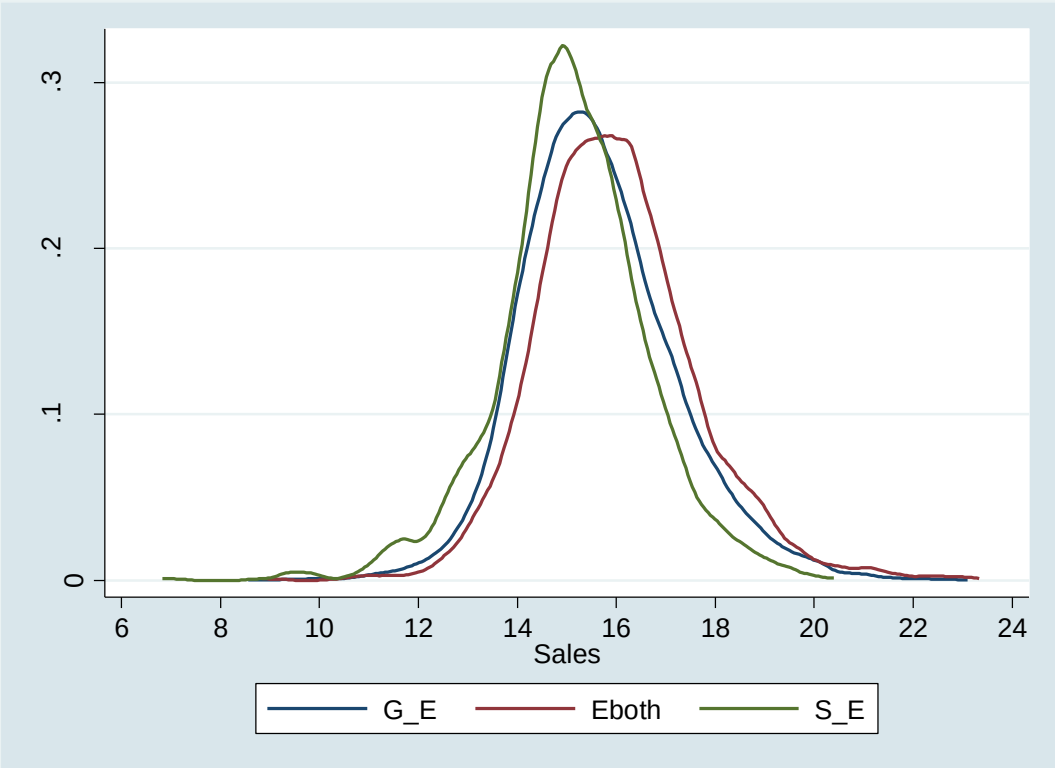
Note: Standard errors are reported in brackets. ***, ** and * denotes significance at 1%, 5% and 10%, respectively. Panel probit regressions with year fixed effects are used.

Figure 1. Services trade and foreign participation



Note: All firms with at least 10 percent of foreign involvement are reported. "*Eboth*" refers to the firms that export both goods and services, "*S_E*" refers to firms that export only services, "*G_E*" refers to firms that export only goods and "Notrade" refers to firms that export neither goods nor services.

Figure 2. Kernel density of size by exporter status, 2008



Note: Sales are in real terms and in logarithmic form. "*Eboth*" refers to the firms that export both goods and services, "*S_E*" refers to firms that export only services and "*G_E*" refers to firms that export only goods.

Appendix

Table A1. Descriptive statistics

VARIABLE	MEAN	STD. DEV.	MIN.	MAX.	Observations
Eboth	0.017	0.130	0	1	330859
G_E	0.218	0.413	0	1	330859
S_E	0.017	0.129	0	1	330859
Employment	3.316	1.306	0.693	11.04	319703
Large	0.160	0.367	0	1	330859
Medium	0.117	0.321	0	1	330859
Sales	14.01	2.337	0	23.32	330859
Capital Intensity	6.101	5.035	0	20.94	319703
Wages	11.21	3.402	0	21.30	330856
Productivity	10.80	1.529	0	19.68	319703
MNE	0.015	0.120	0	1	330859
#Plant	0.872	0.390	0.693	7.757	330859
Export Value	2.942	5.442	0	22.09	330859
#Products	0.543	1.151	0	8.722	330859
#Destinations	0.369	0.782	0	4.905	330589

Table A2. Panel characteristics

	Overall		Between		Within
	Frequency	Percent	Frequency	Percent	Percent
Eboth	5,731	1.7	3,383	2.8	34.2
G_E	72,232	21.8	24,126	19.8	69.1
S_E	5,625	1.7	2,879	2.4	45.1